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ABSTRACT

A study examined the academic skills, study habits, and attitudes of returning adult students and compared them to those of younger, traditional-aged students at the University of Wisconsin-Superior. To gather data for the study, researchers asked 432 students aged 25 and older and 500 traditional-aged students to complete the following four commercially published, standardized tests: the Nelson-Denny Reading Test, Form F; the Metropolitan Mathematics Test, Advanced Level II; the STEP English Expression Test, Form 1A; and the Survey of Study Habits and Attitudes. Of those asked to participate in the study, only 45 of the 432 originally contacted older students completed the battery of tests and only 18 of the 500 younger students did so. Based on the results of these tests, it appeared that although the measured English skills of the older students were comparable to those of the younger students, their math skills seemed to be less adequately developed than those of the younger students. The adult students scored significantly higher on vocabulary and reading-rate subtests; however, they achieved approximately the same comprehension levels as did the younger students. Both groups appeared to have similar attitudes toward educational practices and requirements. (MN)

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ACADEMIC SKILLS OF THE RETURNING ADULT STUDENT

Report of a Pilot Study

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ACADEMIC SKILLS OF THE RETURNING ADULT STUDENT

INTRODUCTION

Over the past two decades, colleges and universities have become increasingly concerned about the academic skills of their incoming students (Cross, 1976.) Three recent developments in postsecondary education have contributed to this concern. The first relates to the dramatic increase in the need for remedial education programs. Although remedial education has been a part of the curriculum in higher education for nearly a century (Cross, 1981), the onset of the civil rights movement and the development of "open admissions" policies in the 1960's resulted in widespread establishment of these programs (Keimig, 1983). In the 1970s, decreasing numbers of traditional-aged students (Carnegie Council, 1980) and a drive toward equality in educational opportunities further contributed to the establishment of remedial education at the postsecondary level (Cross, 1976; Roueche and Snow, 1977).

The second development relates to the decline in academic skills among high school students preparing for college, a phenomenon which has caused widespread concern among educators and politicians (Carnegie Foundation for the Advancement of Teaching, 1977; Keimig, 1983; Levine, 1980; Munday, 1976) and has also received a great deal of exposure in the popular press (Keimig, 1983). Most of these studies and reports have been based on results from the American College Testing Program's (ACT) aptitude test and the Scholastic Aptitude Test (SAT). The reports generally cite the decrease in average scores over the 16 year period from 1963 to 1979 as evidence of the general decline in academic skills among graduating high school seniors (Chronicle of Higher Education, 1984).

The third significant development has been the changing demographic

profile of the American college student. The fact that substantial numbers of older students are enrolled in colleges and universities is now well established in the literature (Anderson and Darkenwald, 1979; Cross, 1980; National Center for Education Statistics, 1975). In April 1978, The Chronicle of Higher Education reported that thirty-six percent of the currently enrolled college students were 25 or older compared with only twenty-eight percent five years earlier (The Chronicle of Higher Education, 1978). Demographic projections from several sources (e.g., Bowen, 1980; Carnegie Council, 1980; O'Keefe, 1977) suggest that this trend will continue well into the 1990s. In addition, technological advances and other societal changes are expected to significantly influence future job markets (i.e., decrease in manufacturing occupations and an increase in "high tech" and service occupations) and will require more adults to return to school [illegible]her to upgrade their knowledge and skills or embark on an entirely new career (Carnegie Council, 1980).

Changes in institutional policies, the establishment of basic skills programs, and the national decline in academic skills have precipitated a great deal of research on the academic and study skills of today's college student (Cross, 1976; Keimig, 1983). However, very little research provides information pertaining to the returning adult student.

Two studies which do provide information pertaining to adult students have examined scores from the Scholastic Aptitude Test (SAT). The Georgia SAT/Adult Learner Study (Fincher, 1983) revealed that the average score for a group of students over 25 was 424 on the verbal section and 388 on the mathematics section. The younger students achieved an average score of 424 on the verbal section and 466 on the mathematics section. The study concluded that as far as measured verbal ability was concerned, adult students could be expected to do as well as most younger students. With respect to mathematical ability, however, younger students are clearly in a more advantageous

position. The second study, produced by the Educational Testing Service, found that older females earn somewhat higher GPAs and SAT-verbal scores and somewhat lower SAT-mathematics scores than do younger females (Casserly, 1982).

Mathematics competency was also explored in two additional studies of adult college students. Fredrick, Mishler and Hogan (1984) found that younger freshmen received higher scores than older freshmen on a standardized mathematics achievement test. They concluded, however, that "while the differences in mathematics scores clearly suggest that adults may be at an initial disadvantage in mathematics, the gap between their skills and those of their younger counterparts does not appear overwhelming or insurmountable" (p. 335). Lyon (1982) found that many adults lacked basic mathematics competencies with particular weaknesses in graphing, geometry, probability and statistics.

Finally, Reed and Murphy (1975) examined the ACT scores and first year grade point averages of veterans and older adults and compared them to younger adults at Townsen State College. They found no significant differences between any of the groups on the variables studied. However, in a recent study conducted by the American College Testing Program (Maxey, 1982) older students tended to earn lower ACT scores, self-reported lower high school grades, but earned higher college grades than would ordinarily be predicted.

The research cited here addresses several important questions pertaining to the academic skill levels of the returning adult student. However, a number of questions need to be explored much more extensively. What are the academic skill levels of the student, age 25 years or older, who has been away from formal education for a number of years? Do adults entering college after an absence of several years possess poorer writing, mathematics and reading skills than the recent high school graduate? Are the study habits and attitudes of adult students different from the traditional-aged student? What

proportion of adult students need remedial coursework to develop minimal academic competency? Are the typical academic and study skill courses offered appropriate for the returning adult student?

PURPOSE OF THE STUDY

Although a large number of students who are over the age of 25 are returning or entering the University of Wisconsin System, there is little information available to assess tne academic skills of adult learners as they begin their course of study. The University of Wisconsin does not have system-wide admission requirements. As a result, there is a great deal of diversity in the admission requirements from institution to institution and in some cases between older and younger students. In fact, several institutions do not require any type of admission or placement test scores.

Considering the paucity of objective comparable data, this study was designed to examine the academic skills, study habits and attitudes of the returning adult student and compare them with their younger traditional-aged counterparts.

TESTING PROCEDURE

Target Groups

The University of Wisconsin System consists of thirteen four-year and fourteen two-year campuses located throughout the state. The University of Wisconsin-Superior was chosen as the site for this pilot study for two reasons. First, while it would have been more convenient for the Wisconsin Assessment Center to pilot the study at UW-Green Bay, the Green Bay campus has been the site of numerous pilot studies and several academic skills studies. Second, it was felt that completing the pilot study at another campus would provide an opportunity to see how the testing procedure would work at a campus distant from the Wisconsin Assessment Center.

The study included two groups of adult degree seeking students aged 25 and over: on-campus students and students enrolled in off-campus courses offered through an extended degree program. In addition, a third group of on-campus students who were less than 25 years of age were asked to participate and served as a contrast group.

Adult Student Target Group. The initial adult target group was recently enrolled adults who had not taken college courses for at least two years. However, only a small number of returning adults met this criterion in the Fall 1983 quarter. As a result the pool was expanded to include all matriculated students, aged 25 and over. Using this criterion, 373 adult students were eligible for participation in the study. In addition, 59 adult students who entered the Extended Degree program at UW-Superior between March 1 and November 1, 1983 were also asked to participate in the study.

Contrast Group. A contrast group of 500 traditional-aged students was randomly selected from the registrar's database of currently enrolled matriculated students. The group included 200 freshmen, 100 sophomores, 100 juniors, and 100 seniors who were less than 25 years of age.

Test Battery Used for Pilot Study

Four commercially published, standardized tests were used to evaluate the basic skills and study habits and attitudes of the students who participated in the study. These tests included the Nelson-Denny Reading Test, Form F, the Metropolitan Mathematics Test, Advanced Level II, the STEP English Expression Test, Form 1A, and the Survey of Study Habits and Attitudes. The chart on the following page provides a list of selected characteristics for each test.

Procedure

As indicated in the previous section, a total of 432 students, age 25 and older, and 500 traditional-aged students were asked to participate in the 2

hour and 15 minute testing session. A one-page letter asking for their cooperation was sent under the signature of the director of the Center for Continuing Education. The only incentives offered were a detailed, individualized report of the test results and the experience of participating in a university study. Students interested in participating in the study were asked to return a pre-paid post card or call the Continuing Education Center indicating the time and date they wanted to test. Students who had not responded to the initial mailing were sent a follow-up letter approximately two weeks after the initial mailing.

Because the student response after the second mailing was still low, an attempt was made to contact the nonrespondents by telephone. A UW-Superior graduate student assigned to the project made at least one attempt to contact each student who had been asked to cooperate in the study. Although a small number of students reached did agree to participate, most students were either not reached directly by phone (i.e., wrong numbers, no answer, or not at home) or indicated that they were not interested in taking the tests.

Five testing dates were scheduled during the weeks of December 5-16 and January 11-17. Testing dates and times were scheduled throughout the week including Saturday and in the morning, afternoon, and early evening to accommodate the maximum number of people. Testing sessions were proctored by a graduate student from UW-Superior.

During the 2 hour and 15 minute testing sessions, students were asked to complete a brief background information form (see appendix) and the reading, mathematics, and English expression tests described earlier. At the end of the testing session, students were given a copy of the Survey of Study Habits and Attitudes and asked to complete the survey at home and return it within one week.

Chart 1

Tests Used in the Academic Skills Project

NELSON-DENNY READING TEST, Form F

Subtests: Vocabulary, Comprehension, Reading Rate

Norms: Two-year college norms based on approximately 4,500 first year students and 1600 second year students. Four-year college norms were developed using a sample of 2300 first year students and 900 college seniors. 1981.

Administration Time: 30 minutes

METROPOLITAN MATHEMATICS, ADVANCED LEVEL II

Subtests: Total Score

Norms: Grade 12; no adult or college student norms. New freshmen entering UW-Green Bay.

Administration Time: 45 minutes

STEP ENGLISH EXPRESSION TEST

Subtests: Total Score

Norms: Freshman and sophomore norms based on approximately 1000 students who completed the test in 1972.

Administration Time: 40 minutes

SURVEY OF STUDY HABITS AND ATTITUDES

The SSHA is a measure of study methods, motivation for studying and certain attitudes toward scholastic activities that are important in the classroom. Scores on the SSHA identify those students whose habits and attitudes may prevent them from taking full advantage of their educational opportunities.

Subtests: Delay Avoidance - promptness in completing academic assignments, lack of procrastination, and freedom from wasteful delay and distraction.

Work Methods - Use of effective study procedures, efficiency in doing academic assignments, and how-to-study skills.

Teacher Approval - The student's opinion of teachers and their classroom behavior and methods.

Education Acceptance - Approval of educational objectives, practice and requirements.

Study Habits - Combines the scores on the DA and WM scales to provide a measure of academic behavior.

Study Attitudes - Combines the scores on the TA and EA scales to provide a measure of scholastic beliefs.

Study Orientation - Combines the scores on the SH and SA scale to provide an overall measure of study habits and attitudes.

Norms: College Freshmen students based upon 3054 cases from nine difference colleges.

Administration Time: Approximately 30 minutes

RESULTS

Background Information

The three attempts to solicit cooperation in the study yielded disappointing results. Slightly more than ten percent (N=45) of the older students actually completed the battery of tests. Among the younger group less than four percent (N=18) agreed to participate in the study. Consequently, this extremely low participation rate should be kept in mind when considering the discussion of results which follows.

Students in the younger age category were predominantly male (61%) while nearly three quarters (73%) of the older group (25+) were female. Table 1 also summarizes the class standing of the students. Among the younger

Table 1. Age and Class Standing of Students Who Tested (Percentages)

Characteristic	Age 16-24	Age 25+
Sex		
Male	61	27
Female	39	73
Class Standing		
Freshman	56	15
Sophomore	17	11
Junior	22	37
Senior	6	37
English Courses		
In High School	x=3.67	x=3.36
In College	x=1.83	x= .98
Math Courses		
In High School	x=3.39	x=2.13
In College	x=2.78	x=1.01

students, nearly three-quarters (73%) were underclassmen. Seventy-four percent of the older group were juniors or seniors. Results from previous Wisconsin Assessment Center studies (Fredrick, 1982; Sewall, 1982) suggest that the sample of the adult students is fairly representative of adult

students at other UW campuses. However, the group of younger students who completed the tests appears to be biased toward males and underclassmen. As a result, the two groups of students were not found to be comparable on either the basis of sex or class standing, two factors which have been associated with performance levels in English and mathematics.

There were also some differences in the academic backgrounds of the older and younger students. On the average, the younger group had more math courses in both high school and college than the older group. The number of English courses in high school was approximately the same for both groups. However, the younger group of students had taken an average of two English courses in college compared to students in the older group who averaged one course. This self-reported academic background information suggests that the younger students generally had a stronger academic background in English and mathematics. This information also supports Solmon and Gordon's (1981) contention that adult learners have had somewhat poorer preparation in English and mathematics at the high school level.

Generalizability of Results

If the results of the objective tests are to be generalized beyond the sample of 63 students, it must be established that the sample is reasonably representative. In order to help establish whether those students who completed the tests were representative of the population at large, a random sample of fifty older (25+) and thirty-five younger students was drawn from the UW-Superior registrar's database. The information gathered from the transcripts for this group included birthdate, total credits earned, class standing, grade point average, and Fall 1983 credits completed.

Table 2 provides a summary of the transcript information comparing the sample of adult students who tested with the randomly selected group of adults who did not participate in the study.

Table 2. Transcript Information
(Adult Students Only)

Factor	Group	N	Mean	SD	T-Value
Age	Tested	26	33.77	9.14	
	Not Tested	50	31.49	5.55	1.17
Total Credits	Tested	26	120.40	72.57	
	Not Tested	50	88.57	52.36	1.98*
G.P.A.	Tested	26	3.14	.56	
	Not Tested	50	2.96	.59	1.30
Fall Credits	Tested	26	9.62	5.09	
	Not Tested	50	10.88	4.50	1.06

*$p < .05$

T-values were calculated to determine if there were significant differences between characteristics of those adult students who tested and those who had not. Of the four factors considered, only the total number of accumulated credits was significantly different. That is, those students who participated in the study tended to have earned more credits than students in the total group. The adult students who tested were also slightly older, had a somewhat higher grade point average and registered for fewer credits during the Fall 1983 quarter. However, none of these differences reached statistical significance.

Table 3. Transcript Information
(Traditional Aged Students)

Factor	Group	N	Mean	SD	T-Value
Age	Tested	17	19.94	1.71	
	Not Tested	35	20.26	1.42	.67
Total Credits	Tested	15	72.83	58.82	
	Not Tested	35	90.25	55.72	.97
G.P.A.	Tested	13	3.15	.71	
	Not Tested	35	2.84	.49	1.45
Fall Credits	Tested	12	14.58	3.00	
	Not Tested	35	13.59	3.78	.92

A similar comparative analysis was completed for students under the age of 25. A random sample of 35 traditional-aged students was drawn from the registrar's database. Students were compared on the same four variables including age, total credits, G.P.A. and number of Fall credits. Results are summarized in Table 3. A statistical analysis of the average differences between the two groups on these four variables did not yield any significant differences.

In summary, while the group of adult students who participated in this study represented less than 10% of the total adult student population, the analysis of transcript data suggests that they represent the total adult student population fairly well. There appeared to be only a slight tendency for the more successful students (as evidenced by G.P.A.) to participate in the study. Among the traditional-aged students there were no statistically significant differences between those who had tested and a random sample of students who had not tested. Nevertheless, because of the small samples, the results of this pilot study should be interpreted with caution.

Academic Skills of Adults

English Skills. The average score for the adult students on the English Expression Test was approximately 41. This score falls at the 68th percentile among a group of 576 freshmen from selected colleges around the country who were given the test in 1969 and 1970 and comprised part of the standardization sample. It also corresponds to the 77th percentile rank of all University of Wisconsin-Green Bay* freshmen who took the test as part of the Freshman Placement Test battery. The average score for the younger students was nearly four points lower and falls at the 55th percentile of the national sample and 62nd percentile when compared to UW-Green Bay freshmen.

*The University of Wisconsin-Green Bay has an undergraduate student population of approximately 450 students. Twenty-eight percent of the students are over 25 and the campus serves primarily a commuter population.

Table 4. Average Scores for Tests Administered by Age

Tests	Age 16-24 (N=18)	Age 25+ (N=45)	t	p
English Expression (STEP)	37.1	40.8	1.50	.144
Metropolitan Math	44.1	39.3	3.20	.002*
N-D Vocabulary	64.1	80.0	3.39	.002*
N-D Comprehension	54.7	55.8	.34	.735
N-D Reading Rate	240.8	298.3	2.58	.015*
SSHA				
Delay Avoidance	23.4	25.6	.40	.702
Work methods	26.6	28.6	.45	.664
Study Habits	50.0	54.2	.44	.672
Teacher Approve.	30.3	34.5	1.52	.166
Ed. Acceptance	28.4	32.0	1.19	.266
Study Attitudes	58.7	66.4	1.39	.202
Study Orientation	108.7	120.6	.82	.435

*$p < .05$.

A comparison of the average scores on the STEP English Expression Test suggests that the adults and younger students who tested have comparable levels of developed English expression skills. However, the almost four point difference in favor of the adult student was not statistically significant.

Math Skills. Results from the Metropolitan Mathematics Test suggest that the younger student group has better developed math skills than does the older group. The average score of 44 for the younger group falls at the 84th percentile when compared to a national representative sample of graduating high school seniors. Adult students had an average score of 39 which is also above the national average for graduating high school seniors and falls at the 66th percentile rank. Unlike the difference in average scores on the English test, results from the math test suggest that the younger group had better developed skills than the older group.

Reading. The Nelson-Denny Reading Test yields three scores: vocabulary, comprehension and reading rate. Two of the scores, vocabulary and reading rate, were significantly higher for the adult student group. The average

comprehension score (55 for the younger group and 56 for the older group) was essentially equal for both groups.

Form F, a recently published form, was used in the present study. The test was renormed in 1980 and includes a fairly representative sample of 2300 college freshmen. When compared with this group, the average vocabulary score for the older and younger groups fall at the 92nd and 77th percentile rank respectively. The comprehension scores were at the 73rd percentile for the adults and the 71st percentile for younger students. The average reading rate for the two groups was the lowest of the three scores. The average adult student score was at the 73rd percentile while the reading rate for the younger group ranked at the 49th percentile. The average scores for both groups were also significantly different in favor of the older group of students. Finally, as seems to be the case with the English and math tests, the overall performance of both groups was above the national average. This was true in all three reading areas assessed, particularly in the vocabulary area.

Attitudes. The Survey of Study Habits and Attitudes (SSHA) yields seven scores from the 100-item test. High scores generally indicate mature study habits and the possession of favorable attitudes toward school. Twenty-eight of the sixty-three students who completed the academic tests also completed the SSHA. The average score for all seven subtest scores for the younger students fell between the 35th and 55th percentile on norms for college freshmen. Among students in the 25 years or older category, average scores fell between the 50th and 65th percentile. These scores suggest that, as a group, the older students have slightly higher scores than do the younger students. This may reflect a more mature attitude toward school and a higher probability of receiving good grades in college. When compared to the average college student, both groups fell within the average range.

DISCUSSION

Three tests of academic achievement and a survey of study habits and attitudes were completed by sixty-three matriculated students from UW-Superior. The students were divided into two groups including students 25 years of age and older and the more traditional aged students under age 25.

A very concerted effort was made to recruit a representative sample of younger and older studerts for participation in this pilot project. Unfortunately, the extremely small sample sizes along with an examination of selected background characteristics (i.e., sex, class standing) suggests that the results may not be generalizable to the entire student population.

First, the measured English skills of the older students in this study are comparable to those of the younger students. This finding corroborates the results of two studies completed earlier at UW-Green Bay (Hogan, 1979; Hogan and Mishler, 1980). It also relates to a conclusion drawn from a study of SAT scores in the Georgia University study. That is, "as far as measured verbal ability is concerned, adult learners could be expected to do as well as most students entering the university system (p. 15).

The fact that younger students have more adequately developed math skills than the older, returning student is the second observation which can be made based on the test results. Because the younger group averaged more math classes in high school it is difficult to determine if these results are due to difference in ability or exposure. However, it is likely that a great deal of the difference is due to the fact that adult students have simply forgotten many of the rules and formulas needed to answer particular problems. Like the English skills discussed above, the present study yielded results which were similar to those found by Fincher (1983), Fredrick, Mishler, and Hogan (1983), and Lyon (1982).

The third and fourth observations relate to the reading skills of the two

groups. Adult students scored significantly higher on the vocabulary and reading rate subtests but achieved approximately the same comprehension levels as the younger students. Although the test results indicate that there are indeed differences between the two groups, it is difficult to determine why these differences exist. More extensive studies are needed to determine whether the reading levels of younger and older students are truly different and to test hypotheses explaining why these differences exist.

The final conclusion is based on the results of the Survey of Study Habits and Attitudes, which suggested a great deal of consistency between the average scores of the two groups on each of the seven subscales of the test. In spite of a slight tendency toward lower scores among the younger students, both groups had similar attitudes toward educational practices and requirements at least as measured by the SSHA. The reader should keep in mind, however, that these results are based on a very small number of students and there is little support for the sample being representative of students as a group. Additional investigations using objective instrumentation and comparing older and younger students is obviously needed to support or refute this observation.

In summary, although the conclusions are highly tentative, they do suggest that there may be some essential differences in the academic skills of older and younger undergraduate students. A more representative study (or series of studies) could confirm these findings and provide some insight into the academic needs of adults. Further study could also lead to some specific recommendations for the types of courses and other services needed by adults to improve their academic skills.

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